

Remarks/Arguments

Rejection of Claims 1-3, 8-10, and 13 under 35 U.S.C. §103(a)

The Examiner rejected claims 1-3, 8-10, and 13 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,200,354 (Hoffman) in view of U.S. Published Patent Application No. 2003/013294 (Wolleschensky). Applicant respectfully traverses the rejection.

“To establish a *prima facie* case of obviousness three criteria must be met. First, there must be some suggestion or motivation to modify the reference. Second, the reference(s) must provide a reasonable expectation of success. The third requirement for a *prima facie* case of obviousness is that the reference must teach or suggest all limitations of the claim at issue. The teaching or suggestion to make the combined combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure.” *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). “Hence, elements of separate patents cannot be combined when there is no suggestion of such combination in those patents. *Panduit Corp. v. Dennison Manufacturing Co.*, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987).”

Claim 1 recites: “An apparatus for implementing phase-contrast or modulation-contrast observation on microscopes with the aid of a modulator arranged in each pupil plane in the observation beam path and containing at least one layer modifying the phase or amplitude, and of a stop arranged in the illumination beam path, wherein the modulator is mounted tiltably and wherein at least a portion of the at least one layer modifying the phase or amplitude is transmissive.” For example, Figure 1 of the instant application shows the modulator (7) between the specimen (5) and the intermediate image (9). The Examiner has cited Wolleschensky to cure the defects of Hoffman regarding claims 1-3, 8-10, and 13, specifically regarding the tiltably mounted modulator recited in Claim 1.

Wolleschensky is solving a different problem than Hoffman

Hoffman is solving the problem of viewing transparent objects/specimens by using a modulator to render phase gradients in phase objects (see Abstract). Wolleschensky is solving the unrelated problem of depth-resolved optical detection, in particular with respect to the

interaction of fluorescent light with a specimen. "The object of the method for increasing spatial detection resolution, preferably in a method displaying images in real time, is a line-shaped excitation and detection of the excitation radiation and/or excited fluorescence reflected, scattered and/or transmitted by a specimen." (Wolleschensky paragraph [0059]).

Wolleschensky's grating is structurally different than Hoffman's modulator

Wolleschensky describes element ST in Figure 9A (this appears to be the element cited by the Examiner in Figure 7A) as being located in the optical path between the light source and the specimen. (paragraph [0095]). On the other hand, Hoffman's modulator is located between the object plane 6 and the visual plane 11.

Wolleschensky's grating consists of a periodic structure as shown in Figure 7B. That is, the grating has no more than two transmissivities in alternating regions. The key and underlying structural aspect of Hoffman's modulator is as follows: "On either side of the central region 19 of the modulator 8 are located regions 20 and 21. *Each region 19, 20 and 21 has a different transmittance from each other* (emphasis added) with the outer region 20 having a greater transmittance than 19, whose transmittance is greater than 21" (col 5, lines 8-12). That is, Hoffman teaches a non-periodic arrangement of three regions of differing transmissivity. This is contrary to Wolleschensky.

Wolleschensky's grating is functionally different than Hoffman's modulator

Wolleschensky's describes the function of his grating: "The increase in axial and lateral resolution is carried out by means of a structuring of the line focus. The structuring is carried out by *superposing the scan line with a periodic structure* (emphasis added) which is generated, for example, by a sine grating in the beam path." (paragraph [0095]). Wolleschensky also states: "The structured scan line is subsequently *imaged in the specimen* (emphasis added)..." (beginning of paragraph [0096]). On the other hand, Hoffman states: "As indicated during the absence of any object at the object plane 6, the image of the rectangular filament is focussed by the optical system only on the central region 19 of the modulator 8. This central region has a given transmittivity selected to absorb some of the light passing therethrough and to transmit the remainder. *The transmitted light becomes determinative of the background illumination and*

regions of the object with no phase gradient to enable one to view a phase or other specimen with viewable and clear contrast effects (emphasis added). (col. 4, line 66 to col. 5, line 7).

Wolleschensky teaches away from the present invention

Hoffman and the present invention both teach the basic configuration of a modulator with a non-periodic structure of different areas of transmissivity for use in viewing objects not visible to the eye. As noted above, Wolleschensky's grating is structurally and functionally different from the above-mentioned configuration, and in fact, is noncompatible with this configuration. A *prima facie* case of obviousness can be rebutted if one of the cited references teaches away from the claimed invention. See *In re Geisler*, 43 U.S.P.Q. 2d 1362, 1366 (Fed. Cir. 1997).

For the reasons stated above, there is no motivation or suggestion to combine Hoffman and Wolleschensky. When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references and the teachings of the references can be combined only if there is some suggestion or incentive to do so. *In Re Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002), citing *In re Fine*. Hence, elements of separate patents cannot be combined when there is no suggestion of such combination in those patents. *Panduit Corp. v. Dennison Manufacturing Co.*, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987).

Hoffman in view of Wolleschensky fails to meet the three requirements for establishing a *prima facie* case of obviousness with respect to Claim 1. Therefore Claim 1 is patentable over the cited prior art. Claims 2, 3, 8-10, and 13 dependent from claim 1, enjoy the same distinction from the cited prior art. Applicant requests that the rejection be removed.

Rejection of Claim 11 under 35 U.S.C. §103(a)

The Examiner rejected Claim 11 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,200,354 (Hoffman) in view of U.S. Published Patent Application No. 2004/0169925 (Dultz et al.). Applicant respectfully traverses the rejection.

Dultz is teaching a nonanalogous field and solving a different problem

The Examiner has cited Dultz to cure the defects of Hoffman regarding Claim 11. However, Dultz is teaching a light filtering device for a telescope, a field nonanalogous to the

microscopy of the present invention. Assuming *arguendo* that the field of Dultz's teachings is analogous to microscopy, Dultz is still solving a different problem than the present invention. The present invention addresses phase-contrast or modulation-contrast in a microscope. That is, problems associated with making a transparent object visible. However, Dultz is solving the problem of filtering out an intensive light from a dark background. Therefore, Dultz does not satisfy the *prima facie* requirement: "The teaching or suggestion to make the combined combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure."

Hoffman in view of Dultz fails to meet the requirements for establishing a *prima facie* case of obviousness with respect to Claim 11. Therefore Claim 11 is patentable over the cited prior art. Applicant requests that the rejection be removed.

Rejection of Claim 12 under 35 U.S.C. §103(a)

The Examiner rejected claim 12 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,200,354 (Hoffman) in view of U.S. Patent No. 6,462,858 (MacDonald). Applicant respectfully traverses the rejection.

Claim 12 recites: "An apparatus for implementing phase-contrast or modulation-contrast observation on microscopes with the aid of a modulator arranged in each pupil plane in the observation beam path and containing at least one layer modifying the phase or amplitude, and of a stop arranged in the illumination beam path, wherein various modulators are arranged on a carrier in a manner introducible into the beam path of the microscope and are selectably mounted, tiltably individually or tiltably together with the carrier, on that carrier and wherein at least a portion of the at least one layer modifying the phase or amplitude is non-reflective."

Hoffman does not teach a tiltable modulator

The Examiner states that Hoffman lacks reference to the modulator being supported on a carrier. However, the Examiner fails to mention that Hoffman does not teach a tiltable modulator, as recited in Claim 12.

MacDonald is nonanalogous to Hoffman and the present invention

Applicant presented arguments regarding MacDonald being nonanalogous in the Reply of April 19, 2005 and for the sake of brevity, these arguments are not repeated. The Examiner has cited *In re Oetiker* in response to Applicant's arguments. Applicants maintain that the Examiner has failed to show that MacDonald's field is reasonable pertinent to the particular problem with which the inventor is concerned. (See *In re Oetiker*). As noted in the April 19, 2005 Reply, MacDonald is teaching an attenuator, not a phase modulator. Further, MacDonald is solving the particular problem of response time for an attenuator, which is unrelated to the particular problem of phase-contrast or modulation-contrast observation in a microscope addressed by Claim 12.

Hoffman does not teach or suggest multiple modulators

In the Response to Arguments, the Examiner asserts that Hoffman varies the degree of the modulation across the modulator (i.e., the magnitude of the amplitude modulation) and that this variation constitutes acting as multiple modulators. Hoffman's modulator depends on the relative differences in transmissivity among the regions of his modulator to implement an amplitude modulation: "On either side of the central region 19 of the modulator 8 are located regions 20 and 21. *Each region 19, 20 and 21 has a different transmittance from each other* (emphasis added) with the outer region 20 having a greater transmittance than 19, whose transmittance is greater than 21" (col 5, lines 8-12). Thus, for Hoffman to vary the magnitude of modulation, it is necessary to change the transmissivities of the regions. Hoffman does not teach that these transmissivities are variable. Instead, Hoffman clearly teaches varying the extent of the modulation (i.e., the positional aspects of the modulation) by varying the location of the filament image in region 19 of modulator 8: "The optical plate 4 can be rotated or tilted about its axis and serves as adjusted to shift the image of the filament with respect to the matching region 19 of the modulator 8. This operation permits a user of the device to control the *extent of the modulation contrast* (emphasis added). (col. 4, lines 12-17). Shifting the position of the filament image does not change the relative transmissivities of modulator 8. This is a critical difference.

Assuming *arguendo* that Hoffman's single modulator did modify the degree of modification as asserted by the Examiner, Applicant maintains that it is not plausible to equate this function with the structure recited in Claim 12. That is, Claim 12 recites multiple modulators, not a variable modulator.

MacDonald does not teach various modulators arranged on a carrier introducible into the beam path of the microscope

The Examiner asserts that Figure 6 of MacDonald shows a carrier introducible into the beam path. Assuming *arguendo* that MacDonald's membrane is analogous to the modulator recited in Claim 12, Figure 6 of MacDonald shows what appear to be a membrane 308 and support structure 302 (neither element is described in the specification). The membrane is not shown touching 302 and therefore 302 does not appear to be a carrier for the membrane. Further, "introducible" implies that the position of a carrier can be adjusted with respect to the beam path. Assuming *arguendo* that 302 is a carrier, there is no teaching or suggestion that the position of any element of Figure 6 is adjustable, in particular, that 302 is adjustable with respect to a beam path. Assuming *arguendo* that changing the shape of the membrane in some manner constitutes modifying the position of the modulator, this is still different than using a carrier to change the position.

MacDonald teaches against a non-reflective modifying layer

Claim 12 recites: "wherein at least a portion of the at least one layer modifying the phase or amplitude is *non-reflective*." MacDonald teaches a reflective membrane. (Abstract; col. 1, lines 56-63; *ad nauseum*). The figures of MacDonald also show that the surfaces of his attenuator are always reflective. MacDonald's invention does not work unless the surfaces are reflective. A *prima facie* case of obviousness can be rebutted if one of the cited references teaches away from the claimed invention. See *In re Geisler*, 43 U.S.P.Q. 2d 1362, 1366 (Fed. Cir. 1997).

Hoffman in view of MacDonald fails to meet the requirement for establishing a *prima facie* case of obviousness with respect to Claim 12. Therefore, Claim 12 is patentable over the cited prior art. Applicant requests that the rejection be removed.

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Conclusion

Applicant respectfully submits that all pending claims are now in condition for allowance, which action is courteously requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'C. Paul Maliszewski'.

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